

Tarsal abnormalities and intersexual character patterns in females of the genus *Cheilosia* MEIGEN (Diptera: Syrphidae)

[Tarsenabnormitäten und intersexuelle Merkmalsmuster bei Weibchen der Gattung *Cheilosia* MEIGEN (Diptera: Syrphidae)]

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Abstract Tarsal abnormalities and intersexual character patterns in female *Cheilosia* MEIGEN, 1822 (Syrphidae) are reviewed and the morphology described including comparisons with normal forms. The observed tarsal abnormalities were found to be consistently correlated with malformations of the primary sexual organs, such as the lack of ovaria, and rudimentary spermathecae, and also malformed postabdominal segments 6–8. DNA sequences of the mitochondrial COI gene were generated for aberrant specimens and were found to be identical with the corresponding sequences of conspecific normal specimens, as expected.

Key words Syrphidae, *Cheilosia*, Holarctic Region, morphology, tarsal abnormalities, DNA sequences

Zusammenfassung Tarsenabnormitäten und intersexuelle Merkmalsmuster bei den Weibchen der Gattung *Cheilosia* MEIGEN, 1822 (Syrphidae) werden überprüft und morphologisch beschrieben, wobei normale Formen vergleichend einbezogen werden. Die beobachteten Tarsenabnormitäten erwiesen sich als stets korreliert mit Missbildungen der primären Sexualorgane, wie fehlenden Ovarien, rudimentären Spermatheken und missgebildeten Segmenten 6–8 des Postabdomen. DNA-Sequenzen des mitochondrialen COI-Gens wurden für aberrante Exemplare ermittelt. Sie erwiesen sich erwartungsgemäß als identisch mit entsprechenden DNA-Sequenzen artgleicher normaler Exemplare.

Stichwörter Syrphidae, *Cheilosia*, holarktische Region, Morphologie, Tarsenabnormitäten, DNA-Sequenzen

1 Introduction

The genus *Cheilosia* MEIGEN, 1822 (Syrphidae, subfamily Eristalinae, tribe Rhingiini) comprises about 300 species in the Palearctic region. Most *Cheilosia* species are extensively black in body ground colour, while their sometimes dense pilosity ranges in colour from black to yellow and red. Species determinations of *Cheilosia* species treated in this study can be achieved with CLAUSSEN & STÄHLS (2007) and HAARTO & KERPPOLA (2007) for Palearctic taxa and FLUKE & HULL (1947) for Nearctic taxa.

Legs of *Cheilosia* species are simple, without strong modifications like bulges or spines, nor are they strongly curved. The species generally have simple tarsi rarely do single segments of the distal tarsomeres show species specific modification, while occasional modifications of the hind basitarsi only involve their slight thickening. In a few Palearctic and Nearctic species individual females are known having the basitarsi of the hind legs exceptionally enlarged to about twice their normal width. BECKER (1894) in his monograph on the genus *Cheilosia* described one such female with the name *Cheilosia globulipes*, but later this taxon was regarded as an aberrant *C. urbana* MEIGEN, 1822. These deviations are almost always accompanied to a varying extent with incompletely expressed male characters in the female specimen. These aberrative